Multi Material Flexible Recovery Collaborative

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SUSTAINABLE PACKAGING COALITION®

Agenda

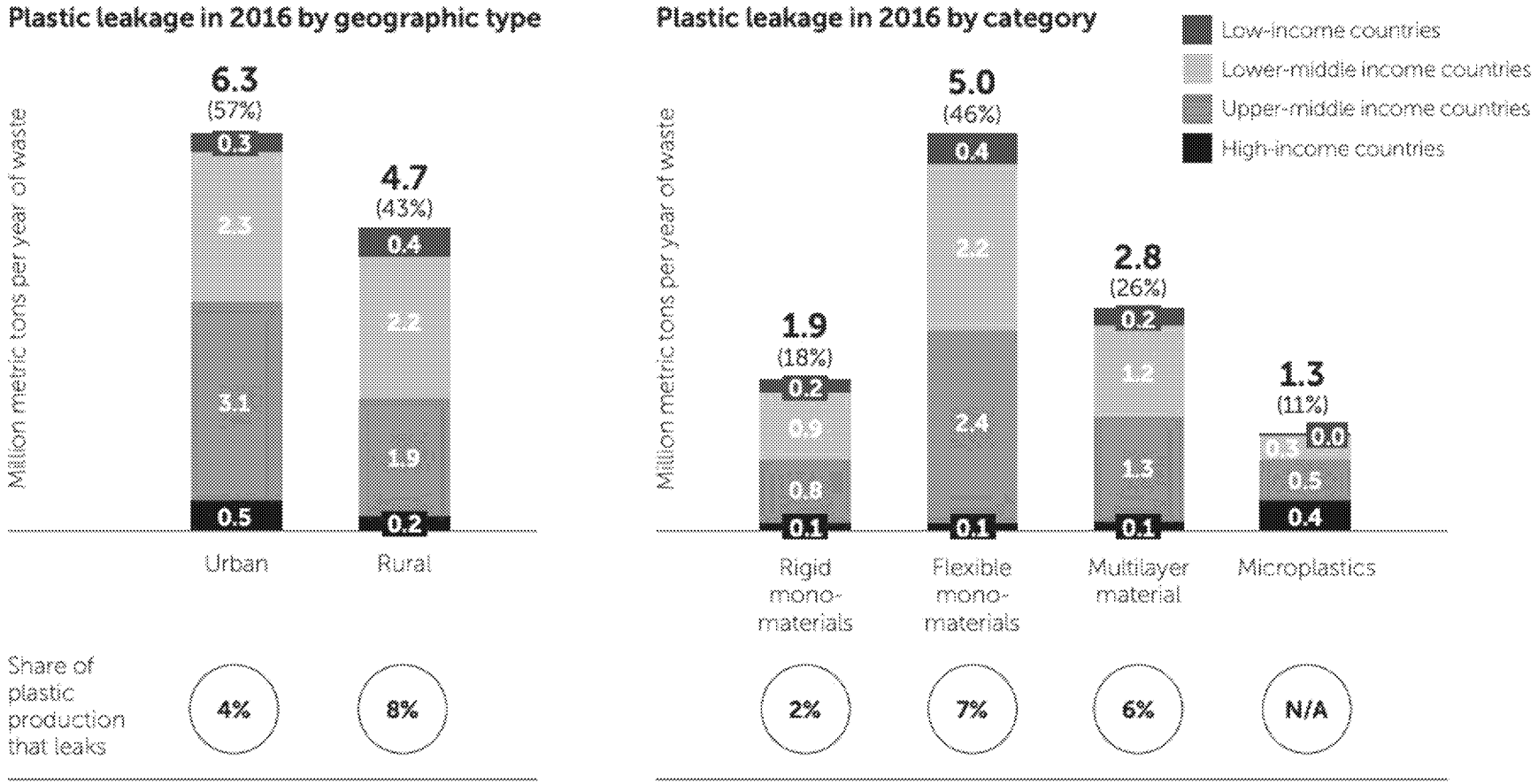
1. Welcome and updates
2. Next steps for MMFR Collaborative
3. Sharing SPC's research agenda

Pew report highlights challenges with flexible packaging

PEW

Figure 6: Main leakage points by geographic archetype and plastic category, 2016

Flexible monomaterials and multilayer materials have a disproportionate share of leakage

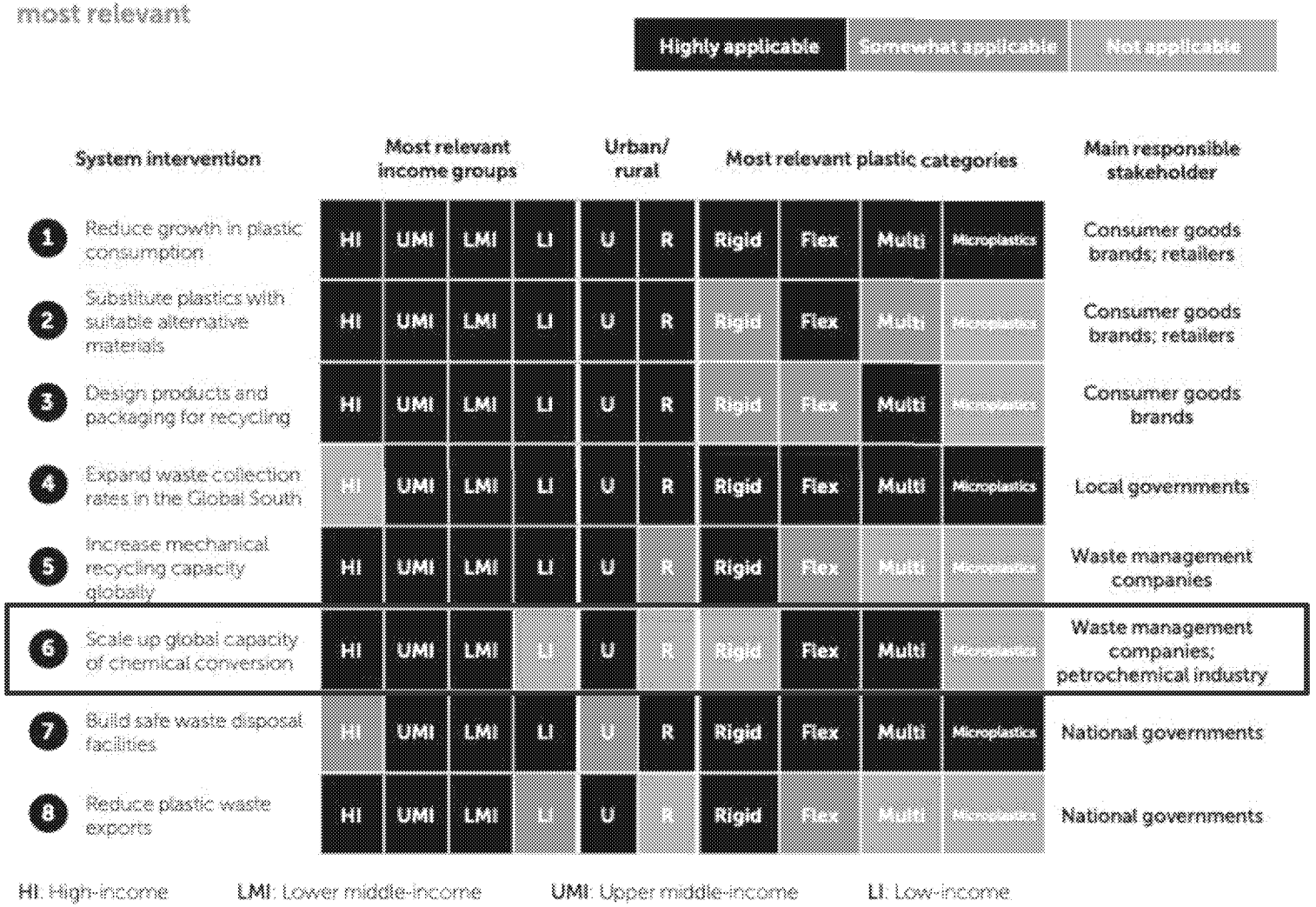


https://www.pewtrusts.org/en/research-and-analysis/articles/2020/07/23/breaking-the-plastic-wave-top-findings

Defines chemical recycling as highly applicable to flexibles

Figure 14: System interventions relevance by geographic archetype and plastic category

System interventions need to be applied to the regions and plastic categories for which they are most relevant



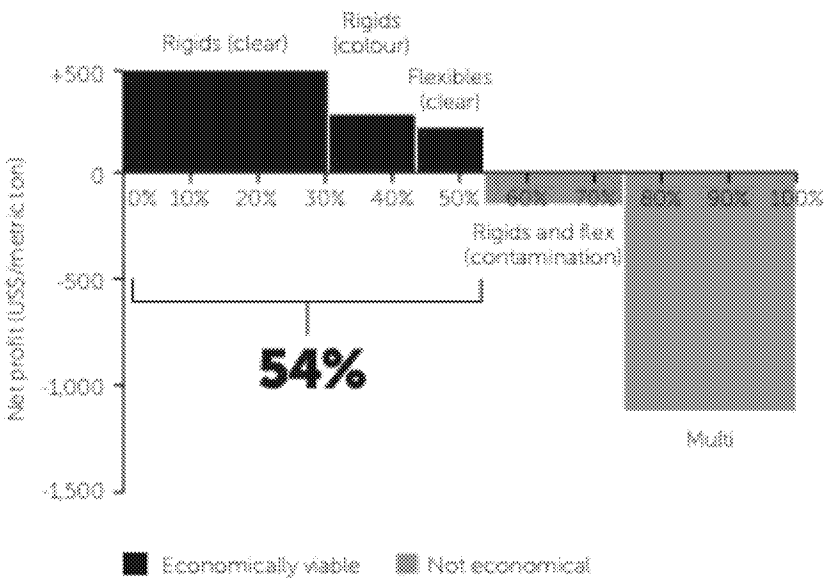
PEW

There is a role for both mechanical and chemical recycling

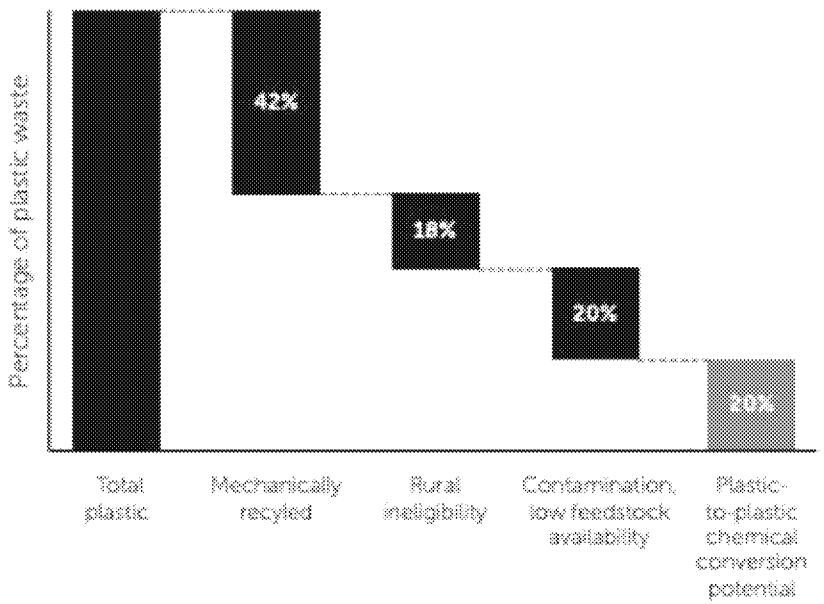
Figure 11: Limitations of mechanical recycling and plastic-to-plastic chemical conversion

By 2040, mechanical recycling could deal with 54 per cent of the plastic waste stream economically while plastic-to-plastic chemical conversion could deal with 20 per cent

1. **Financial feasibility of mechanical recycling, high-income (HI) countries only, 2040**

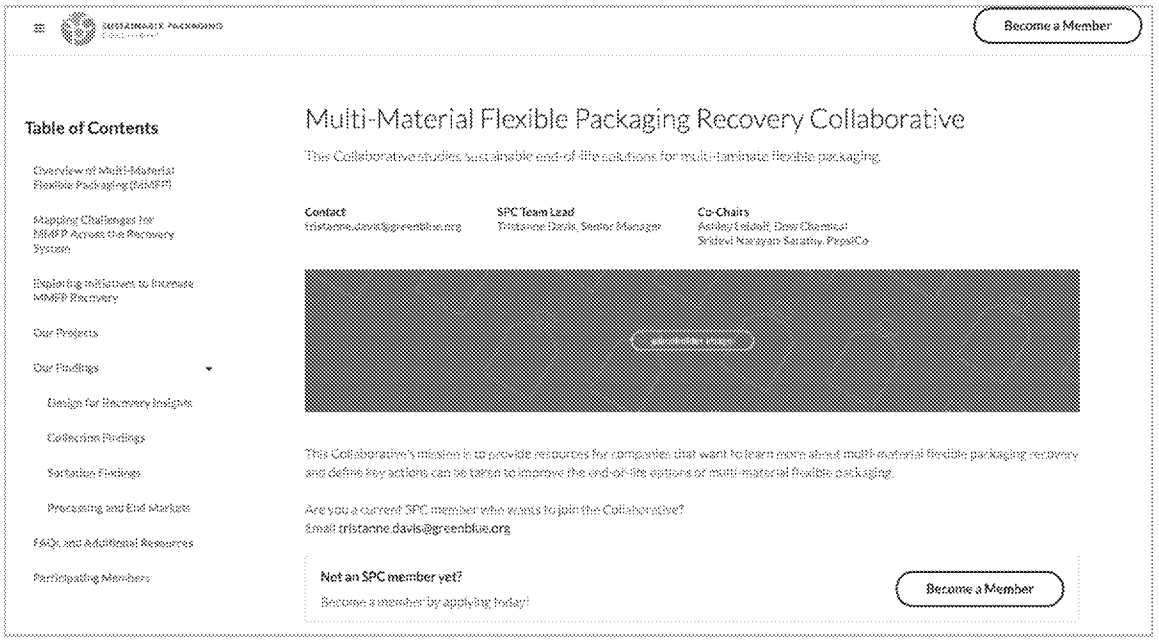


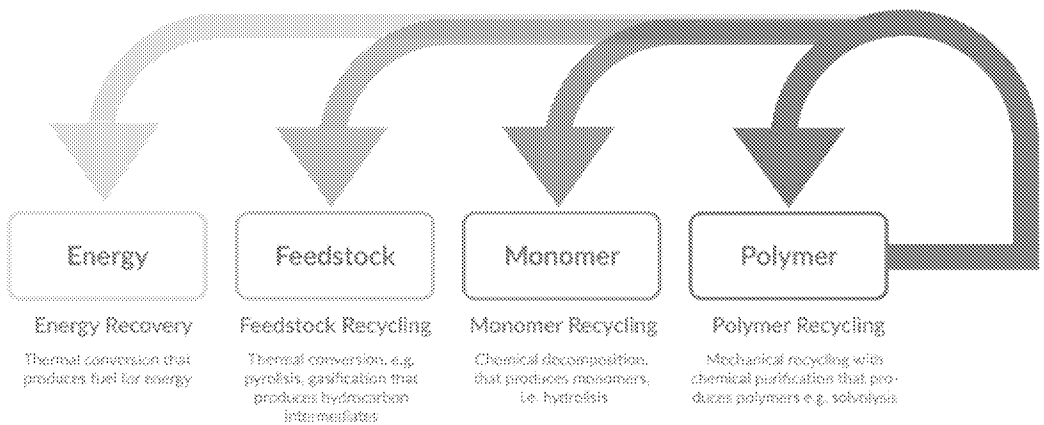
2. **Plastic waste feasible for plastic-to-plastic chemical conversion, 2040**

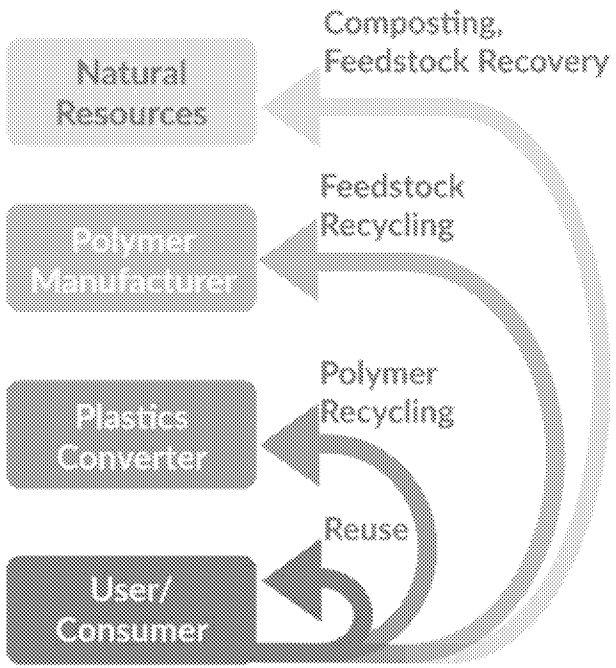


New website launched!

https://collaboratives.sustainablepackaging.org/multi-material-flexible-packaging-recovery

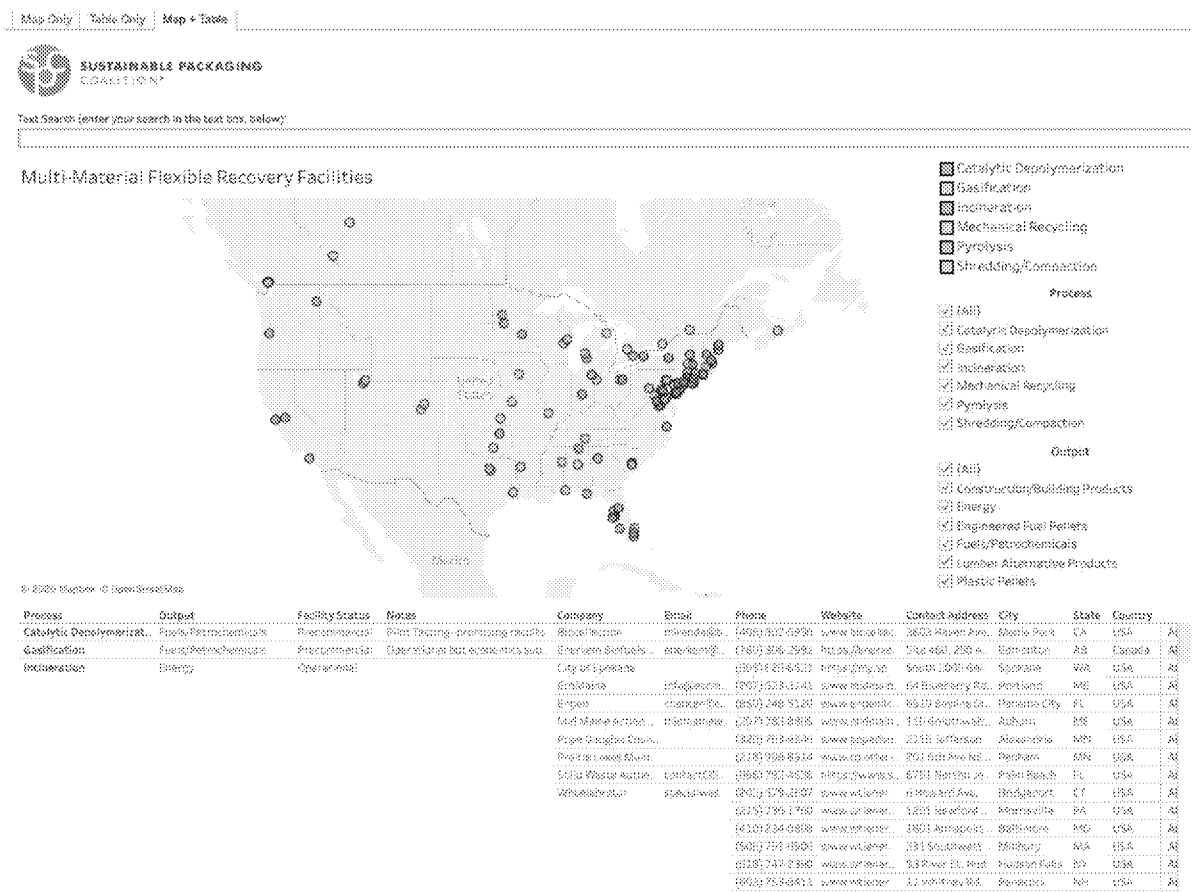






Next steps for MMFR Collaborative

- Update Technology recovery map - and build on this further



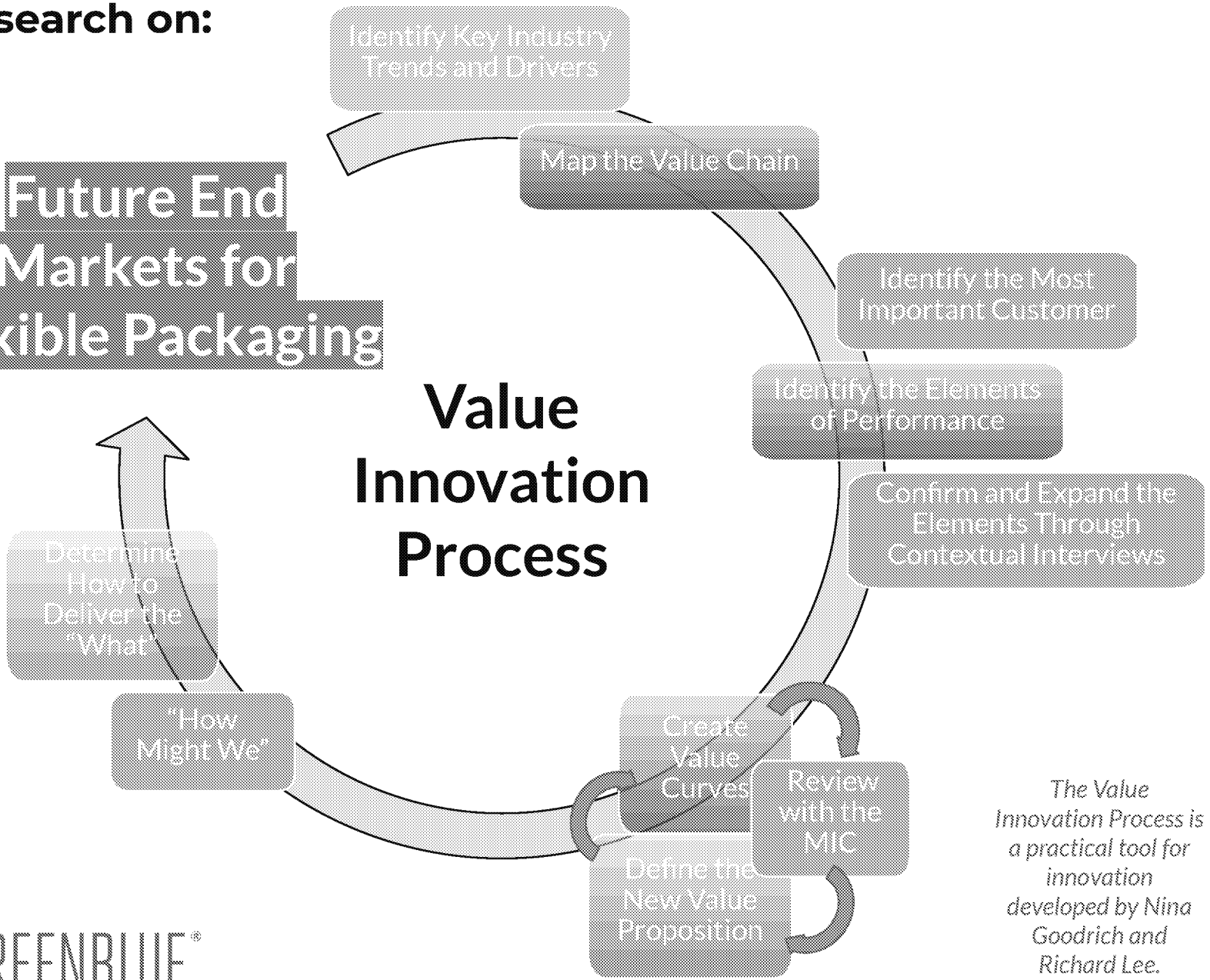
Next steps for MMFR Collaborative

- We discussed 'design for chemical recycling' guidelines on our last call. Some back work needed before this is possible.
- This group can expand our focus on 'technologies mapping' - building off of our past work. **Develop a matrix tool reviewing each technology including key info like yield, LCA impacts and which markets technologies lead to. Create a recovery hierarchy by resins/formats based on this info.**
- Design guidance and other projects may emerge from this once the flexibles landscape is fully understood.
- Scale is needed for these technologies - you can't look at MMF in isolation! **Broaden the focus of this group to all flexible packaging.**

	PE film	PLA film	PE/PET
Feedstock recycling - Pyrolysis	x Yield LCA	NA	x Yield LCA
Monomer recycling - Decomposition	NA	x Yield LCA	NA
Polymer recycling - Mechanical	x Yield LCA		Only with solvolysis add-on Yield LCA

SPC research on:

Future End Markets for Flexible Packaging



The Value Innovation Process is a practical tool for innovation developed by Nina Goodrich and Richard Lee.

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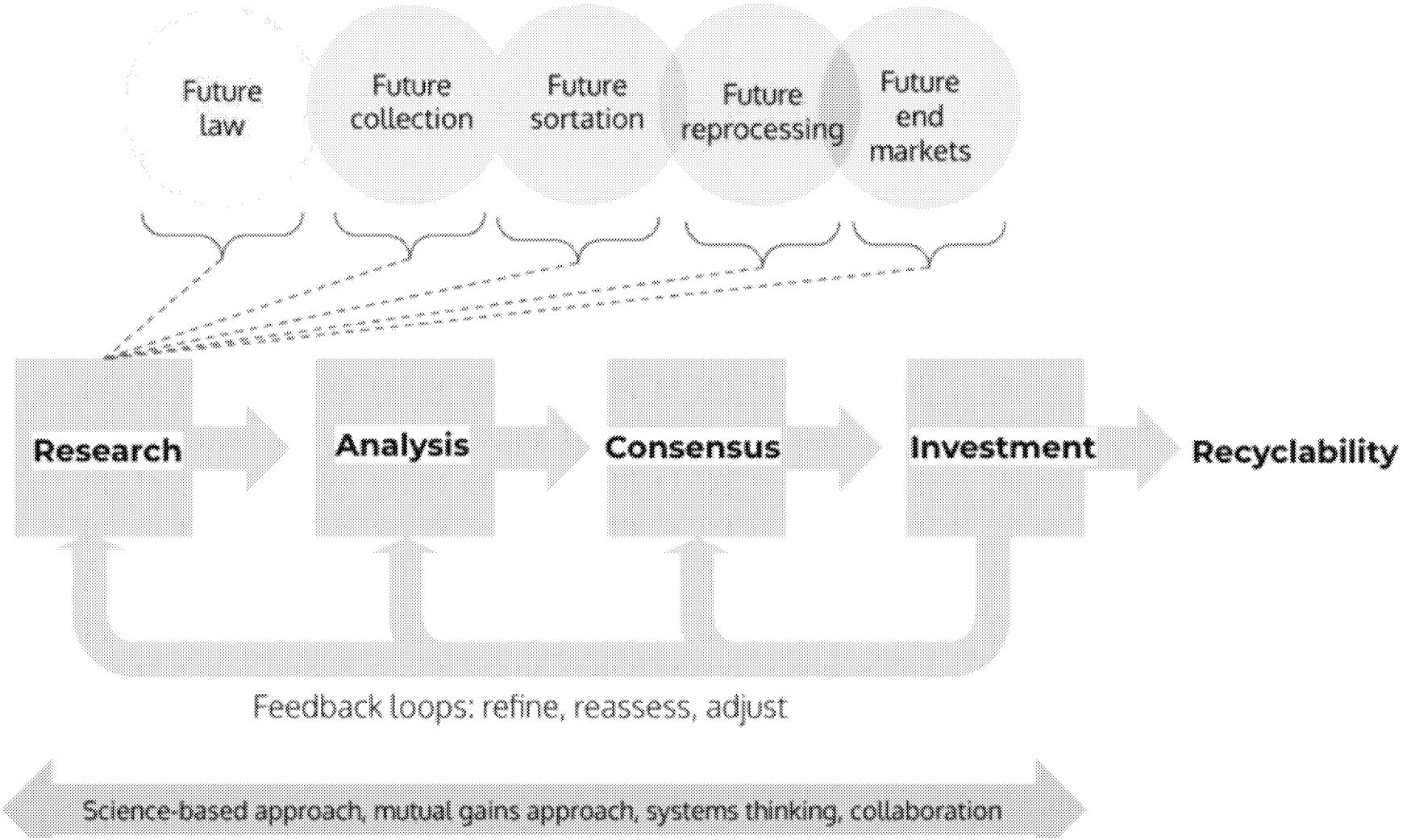
Future law
Future collection
Future sortation
Future reprocessing
Future end markets
Research
Analysis
Consensus
Investment
Recyclability
Feedback loops: refine, reassess, adjust
Science-based approach, mutual gains approach, systems thinking, collaboration

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The essential questions...

- End markets for recycled plastics are mostly in durables and non food grade packaging. Limited demand for material currently on the market drives low recovery and downcycling.
- Limited supply of quality PCR means can't use much in packaging at scale.
- Can new emerging technologies like chemical recycling change this? What collection systems will feed these technologies? How will packaging need to be designed to benefit from these technologies?

Summary of 'How to Deliver the What' - new SPC research (in development)

Conduct new research project - start Q4 2020

Provide visibility to the flexible pkg stream (industry, commercial and consumer):

1) Amounts, composition
2) Collection systems
3) Markets, including yield differences for different markets.

- Initial focus on films but make link to all olefins.
- Establish that household level is a small piece.
- Scale and critical mass is needed for chemical recycling. What is the pathway to achieve that?
- Build off of Pew and WM study.
- Collaborate with FPA and RILA.

Create a recovery technologies tool - start Q4 2020

List out all of the technologies for film recovery (mechanical and chemical) and review each:

- Include screening criteria like LCAs, yield
- Allow users to search by 'pyrolysis' etc.
- Have hierarchy by resins/formats.
- Use categories defined in MMFR group and build on this.
- Build off of CLP work.
- Good project for MMFR Collaborative → *The Flexible Packaging Recovery Collaborative.*

Evolution to future steps - start date TBD 2021

The solution may be more apparent once we know where the materials are (research project) and what the technologies are (technologies tool). Once we complete these projects, there will likely be future projects. Some possibilities:

- Design guidance for different polymer families/barrier combos that feed different chemical and mechanical technologies and fit into different collection pathways.
- Thought leadership establishing a hierarchy of end markets and pathways for the future of flexibles/olefins recovery and beyond.

Stay tuned!

We will be in touch soon with next steps.